

ORIGINAL STUDY

Safety of Scar on Repeat Second Cesarean Section in Patients with Previous One Cesarean Section

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Abstract

Objective: To evaluate the safety and integrity of scar at repeat cesarean section, in patients with previous one cesarean section performed at different settings.

Study design: A retrospective study in a tertiary care obstetric unit over a period of one year (2006).

Material and methods: All patients with previous one cesarean section, undergoing emergency and elective cesarean sections were enrolled at our institution. The variables noted were age, parity, residential area, location of previous cesarean section and associated complaints, e.g. uterine contractions, vaginal leaking/bleeding and comorbid medical disorders.

Outcome measures: Operative findings in terms of thinning of scar, dehiscence or rupture were recorded. The effects of skill level of surgeon and set-up of previous cesarean section were analyzed.

Results: Two hundred and seventy cesarean sections were performed for different indications in patients with previous one cesarean section over a period of one year. Out of all patients, extreme thinning of scar was noted in 36 (13.3%) patients. Seven patients (2.6%) had scar dehiscence. Only 3 (42.8%) patients with scar dehiscence had associated complaint of scar tenderness, while 22 (61%) of 36 cases of scar thinning were having scar tenderness. All 7 cases of scar dehiscence had their previous cesarean sections at teaching hospitals. No patient underwent hysterectomy and all patients with scar dehiscence had successful repair.

Conclusion: The study concludes relatively inadequate scar thickness rate but at the same time relatively acceptable scar dehiscence rate. Thus it will still be safe to subject the patients to trial of labor after meticulous scrutinization and individualization. At the same time adequate surgical training of doctors (trainees and community doctors) through different formats is recommended.

Keywords: Previous scar uterus, safety, scar dehiscence.

INTRODUCTION

Cesarean section is the most common major surgical obstetric intervention and its frequency is likely to increase further for nonrecurring indications. The main indication for cesarean section has become repeat cesarean section. Documentation that the rate of uterine rupture is only marginally increased among women undergoing a trial of labor¹ than among those undergoing an elective repeat cesarean section (0.4% vs 0.2% OR = 2.1), with a significant decrease in need for transfusion (OR = 0.57) or hysterectomy (OR = 0.39), has led authorities to encourage vaginal birth after cesarean.² However, nearly a quarter of women, who are candidates for a trial of labor require induction of labor. A group of investigators concluded³ that among women with a previously scarred uterus, induction of labor is associated with an increased risk of uterine rupture compared with spontaneous labor (2.3% vs 0.7% p = 0.001).

Current knowledge of myometrial repair and regeneration after cesarean section is extremely limited. Schwartz and Paddock⁴ were the first to investigate myometrial healing in an animal model. They observed that the uterine incision of the guinea pig heals by fibroblastic proliferation. The first step in the initial healing process is fibroplasia, followed by maturation and reorganization of the myometrial tissue. There is no scar formation in the guinea pig according to these investigators. A more recent study in humans led the investigators to a different conclusion, demonstrating granulation tissue and fibrosis within 18 days of cesarean section.⁵ Thus the cesarean section defect is filled by connective tissue, not myometrium, with resulting scar formation of variable strength and thickness, which again is effected by different variables.

It is important to recognize that small asymptomatic scar dehiscence occur in women delivered both vaginally and by elective cesarean section. Uterine rupture is a rare event with unpredictable clinical outcome, more so in patients with VBAC. Complete uterine rupture can be an obstetric catastrophe, which causes maternal and fetal morbidity and mortality world wide.⁶ Repeat elective cesarean section avoids scar dehiscence/rupture and perineal trauma remarkably, but at cost of increased bleeding, thromboembolism, prolonged recovery and increased risk of placenta previa and accreta in subsequent pregnancies.

The subject of the delivery of a woman after a previous one cesarean section remains controversial.⁷ The complexity of confounding variables and the differing clinical practices make it difficult to apply general obstetric knowledge to the care of individual patients. Ideally, best practice should be resolved using randomized controlled trials. In reality, however such trial are difficult to conduct.⁸

This retrospective study was conducted to evaluate the safety and integrity of scar in patients with previous one cesarean section, undergoing repeat cesarean sections without labor.

MATERIAL AND METHODS

This study was conducted at Jinnah Hospital, Lahore, which is a 1200 bedded tertiary care hospital. We searched the patients, hospital record from January 2006 to December 2006. Data of all pregnant patients with previous one cesarean section was reviewed, who underwent repeat cesarean section for any indication. Women in labor and those who were selected for VBAC trial were excluded.

The patients, notes were examined for details of patients including identification data, presenting complaints, coexistent risk factors and operation notes details (for scar thickness). It is a standard practice at our hospital. (since this a retrospective study). Uterine rupture was defined as an intraoperative finding of fetal parts within the abdominal cavity. Dehiscence was defined as a window in the lower segment with either membranes bulging or parts of the baby visualized through it. Thinned out scar was defined as a papery thin lower uterine segment, with thickness less than 3 mm. Type of repair was noted. All informations were transferred to a data sheet and the data was analyzed.

RESULTS

During the study period a total of 2500 vaginal deliveries took place and 1303 (more than 50%) cesarean sections were performed, out of which 270 were repeat cesarean sections (20.7%).

Age and parity distribution is shown in Table 1. Residential area is highlighted in Table 2.

There were a total of 7 cases of complete and partial scar dehiscence (2.6%). Scar thinning was found in 36 cases (Table 3). In all these cases the scar problem occurred at term before labor and at the previous old scar. Only 3 of 7 cases (42.8%) of scar dehiscence were associated with preoperative scar tenderness (Table 4), which shows that scar tenderness is a poor indicator of actual scar complication. While 22 of 36 cases (61%) of scar thinning were having positive scar tenderness. This could probably be due to stretching of scar tissues.

All 7 cases of scar dehiscence had their previous cesarean sections at teaching hospitals. In 31 (86%) of 36 patients with thin scar, the previous cesarean sections was performed at teaching hospitals and remaining 5 (13.9%) had their previous surgery at remote peripheral hospitals (Table 5).

No patient underwent hysterectomy and successful repair was performed in all patients. There were no maternal and fetal complications.

DISCUSSION

This audit confirmed that inadequate scar thickness and dehiscence is a relatively common finding even if cesarean section is performed in absence of uterine contractions. The risk of scar dehiscence was 2.6% and that of thin scar was

Table 1: Age and parity distribution N = 43

Age (years)	No	%age	Parity	No	%age
≤ 20	–	–	≤ G2P1	33	76.7
20-30	39	90.7	≥ G2P1	10	23.2
31-40	4	9.3	–	–	–
≥ 40	–	–	–	–	–

Table 2: Residential area N = 43

Area	No	%age
Lahore teaching institution	32	74.4
Pariphery	11	25.6

Table 3: Operative findings N = 270

Findings	No	%age
Thinned out	36	13.3
Scar dehiscence	7	2.6

Table 4: Coexistent risk factors N = 43

Risk factors	No of patients	%age
Scar tenderness	25	58.13
Hypertension	6	13.9
Postdate pregnancy	5	11.6
Bad obstetric history	2	4.6
Rupture of chorioamniotic membranes	2	4.6

Table 5: Place of previous surgery N = 43

Place	No of patients	%age
Teaching hospitals	33	76.7
Remote peripheral hospital	5	11.6
Local private hospitals	5	11.6

13.3%. We can hypothesize that if all the patients with scar would have been subjected to a trial of labor, the percentage of scar dehiscence would be much higher than is actually calculated.

The overall incidence of uterine rupture varies from 0.2-0.7%. However external validity (generalisability) of these estimates is limited because of the diverse sample of women, physician preferences, classification of rupture/ dehiscence and varied management protocols.

A meta-analysis of observational and comparative studies examining maternal and fetal morbidity and mortality following trial of labor compared with women undergoing repeat cesarean section, showed the combined scar dehiscence and rupture rates for lower segment scars were 1.8% for all trials of labor, 1.9% for women undergoing repeat cesarean section without negligible labor (almost difference) and 3.3% for women who underwent emergency cesarean section during a trial of labor.⁹ Successful VBAC group will have significantly lower scar problems as majority of these women will not undergo scar examination and small asymptomatic dehiscence will not be noted. More over there were no differences in perinatal death rates. The absolute risk of hysterectomy was 0.05%.

Similarly in a population based study in Nova Scotia of 6138 women with a previous cesarean reported in 1996, a trial of labor was compared with an elective second cesarean.¹⁰ There were ten cases of uterine rupture, all within the trial of labor group. Other maternal complications were also twice as common among VBAC group.

Another large prospective American study of women with prior cesarean delivery was conducted at 19 academic medical centers.¹¹ The authors concluded that a trial of labor after cesarean was associated with a greater maternal and perinatal risks than elective repeat cesarean. All these studies are contributing to a reversal of the trend in VBAC rates. Cesarean deliveries are now at the highest level ever reported in united states.⁷

One clear limitation in our study was its, retrospective design and the absence of previous operative reports in many patients. It is possible that a low transverse incision could have extended laterally into the side walls of the uterus or a T-incision performed during a prior cesarean delivery without appropriate warning of the patient or poor documentation in the operative report. Other potential variables include different surgeons with different competence level, multiple surgical techniques (one vs two layer closure), use of different surgical materials (catgut vs vicryl), postoperative complications (fever, wound sepsis), time interval between first cesarean section and next delivery, size of the fetus and morbid maternal obesity.^{12,13} If all these variables are accounted for in final calculations, the overall scar problems will be much reduced. An understanding of the mechanisms controlling uterine scar formation could lead to new therapies promoting better healing at the incision site.

CONCLUSION

Although the VBAC population was not analyzed in current study, yet in view of calculated 2.6% risk of dehiscence, it will be safe to say that the best option for women with a single previous low transverse cesarean section, is that obstetricians should continue to practice the art of obstetrics based on good clinical practice, taking into account individual patient circumstances and the quality of local services.

Moreover, as the complication rate and operative outcome may be directly related to experience of the surgeon, it is important to ensure that surgeons (trainees in teaching units) are competent in performing a procedure before they are allowed to conduct an independent surgery. Similarly community doctors can be adequately trained through surgical skill workshops, providing senior consultant supervision services and establishing quick effective referral system.

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